DOCUMENT RESUME

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ABSTRACT

A project was conducted based on the following three objectives: (1) demonstrate a regional plan for the implementation of an open entry-exit (flexible) career development program encompassing career awareness, career exploration, and career preparation; (2) expose each student to a range of career clusters within the context of his educational development and career development levels (awareness, exploration, and preparation); and (3) develop and implement a model computer resource, career-oriented curriculum for use at all grade levels (K-12). Two career education curriculum resource units were developed and four career education resource units were revised by K-12 classroom teachers during the 1975-76 project year. These resource units were keypunched and stored in a computer for retrieval as per teacher/student requests. Several inservice meetings were conducted for seventeen school districts throughout a three-county area in Northwestern Pennsylvania, and community interaction was increased. The evaluation plan was basically one of measuring the effectiveness of the K-12 Career Education Curriculum Model. (See CE 017 642 for the evaluation report.) In summary, the evaluators felt that, due to the limited amount of time during which the students were exposed to the project, the benefits of career education could not totally be assessed by the testing program. In general, responses from teachers and administrators to the materials, format, and methodology were favorable. (Author/BM)

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A PROJECT TO DEMONSTRATE INCREMENTAL IMPROVEMENTS IN A K-12 CAREER EDUCATION PROGRAM THROUGH AN EXEMPLARY MODEL

Grant Number G007502398

FINAL FINANCIAL STATUS AND PERFORMANCE REPORT

Prepared By

STATE AND FEDERAL LIAISON SERVICES
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NATIONAL INSTITUTE OF EDUCATION

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CE 017643

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CAREER EDUCATION PROGRAM: FINAL REPORT

July, 1976

1. Project No.: 554AH50287	2. Grant No.: G007502398	3. Nature of Report: __ Semi-annual X Final
4. Project Title: A Project to Demonstrate Incremental Improvements in a K-12 Career Education Program Through an Exemplary Model		5. Period Covered by this Report July 1, 1975 to June 30, 1976
6. Category of Project (as specified in 45CFR 160d.5 and 160d.11) X Incremental ___Setting ___Populations ___Communications ___ State Plan		
7. Project Director: David G. Minnis	8. Grantee/Assistance Contractor Institution/Address/Phone: Northwest Tri-County Intermediate Unit 252 Waterford Street Edinboro, Pennsylvania 16412 (814) 734-5610	

9. Major Activities:

OBJECTIVE 1: Demonstrate a regional plan for the implementation of an open entry-exit (flexible) career development program encompassing career awareness, career exploration, and career preparation.

1.) Demonstration seminars conducted throughout the 1975-76 school year to demonstrate a regional plan for career education.

a.) Area School Board Members - Northwestern School District
b.) Local Vocational-Technical Staff Members - Northwestern Pennsylvania Cooperative Education Council - February 20, 1976
c.) Local Chief School Officers - Superintendents from 17 school districts in Erie, Crawford and Warren counties - Project Director orientation of project activity plans (August, 1975)

d.) Local Building Administrators, Counselors, Classroom Teachers - On-going demonstrations and interaction by project staff on a regular basis throughout the project year.

e.) National Reading Conference, Philadelphia, Pa. A demonstration of a regional plan for Career Education by infusing career concepts into existing reading programs. Conducted by project staff through personal invitation - March, 1976.

OBJECTIVE 2: Expose each student to a range of career clusters within the context of his educational development and career development levels (awareness, exploration and preparation).

1.) Periodic meetings with third party evaluators on evaluation plan to pre and post test experimental and control groups on academic achievement as well as career knowledge. For a detailed description of the outcomes of these meetings, refer to Section 11, "Evaluation" of this project.

2.) Continuous in-depth consultation sessions conducted throughout the 1975-76 school year with experimental teachers as well as regular classroom teachers on Career Education philosophy and suggested procedures on infusing career education concepts into existing curricula. As a result of this exposure, a total of 260 classroom teachers requested career education curriculum resource units, in turn exposing 1,159 students to a broad range of occupations.

In the areas of reading and math achievement, minimal differences between the experimental and control group were reported. However, in the area of career education, the experimental students in the kindergarten and second grade groups scored significantly higher than the control groups. At the fourth, ninth, and tenth grade levels, no significant differences between the groups could be detected. It should be emphasized that a change in the original evaluation design (see Section 12, "Anticipated Changes and/or Problems") resulted in delayed pretesting, approximately November, 1975. Consequently, actual usage of the curriculum resource units for testing purposes was narrowed to approximately 5-1/2 months prior to post testing.

OBJECTIVE 3: Develop and implement a model computer resource career oriented curriculum for use at all grade levels, K-12.

1.) Planning, research and development of a computer-based, career education curriculum model. The specific tasks utilized in accomplishing this objective include the concept of teacher involvement. Experiencing this concept along with available research (Doctoral dissertation: Greg Ohanneson, "Career Education Opinions of California High School Teachers") revealed that teacher involvement is a key to any educational program's success and advancement.

The technique of integrating career education into curriculum resource units was a direct result of extensive research of the CBRU (Computer Based Resource Unit) program initiated by Dr. Robert Harnack of the State University of New York at Buffalo.

In developing the career education curriculum model, the utilization of the "Unit Approach" became desirable because available data (pertaining to this past decade) revealed that changes in: the structure and organization of subject matter, new patterns for staff utilization, and new instructional resources and techniques, as well as a philosophical, move toward individualization of instruction had become major education movements within a very short period of time.

The concept of the "pivotal discipline" was the final technique researched and developed. By definition, a pivotal discipline is "the hub from which other disciplines are coordinated, integrated and reinforced" (Astonellis and James, Cross Discipline Planning). This technique was an ideal place in which to organize the other disciplines. In a like manner, it was felt that cross planning for a pivotal discipline should provide a vehicle for establishing cooperation which otherwise might be difficult to obtain, given the long history of academic discipline separation. (See Table I for a diagram of the "pivotal discipline").

Each activity was written for specific,researched professional and individual learner variables. (For professional and student variables, refer to Appendix I)

2.) Revised four senior high curriculum resource units:

a. Basic Operations
b. Household Science
c. Talk
d. The American Election System

Developed one elementary curriculum resource unit:

a. Health Occupations

Developed one junior high curriculum resource unit:

a. Communication Occupations

Initial revision of the four senior high units began during the summer of 1975 (July 7, 1975 - August 15, 1975). These units were completed during a thirteen day period in June, 1976 (June 14, 1976 - June 30, 1976).

The development of the elementary and junior high units began on March 4, 1976 and continued through June 10, 1976. These writing sessions met one night per week for a three hour period each night. These units were completed during a thirteen day period in June, 1976 (June 14, 1976 - June 30, 1976).

For a breakdown of curriculum developers, refer to Table II.

TABLE I

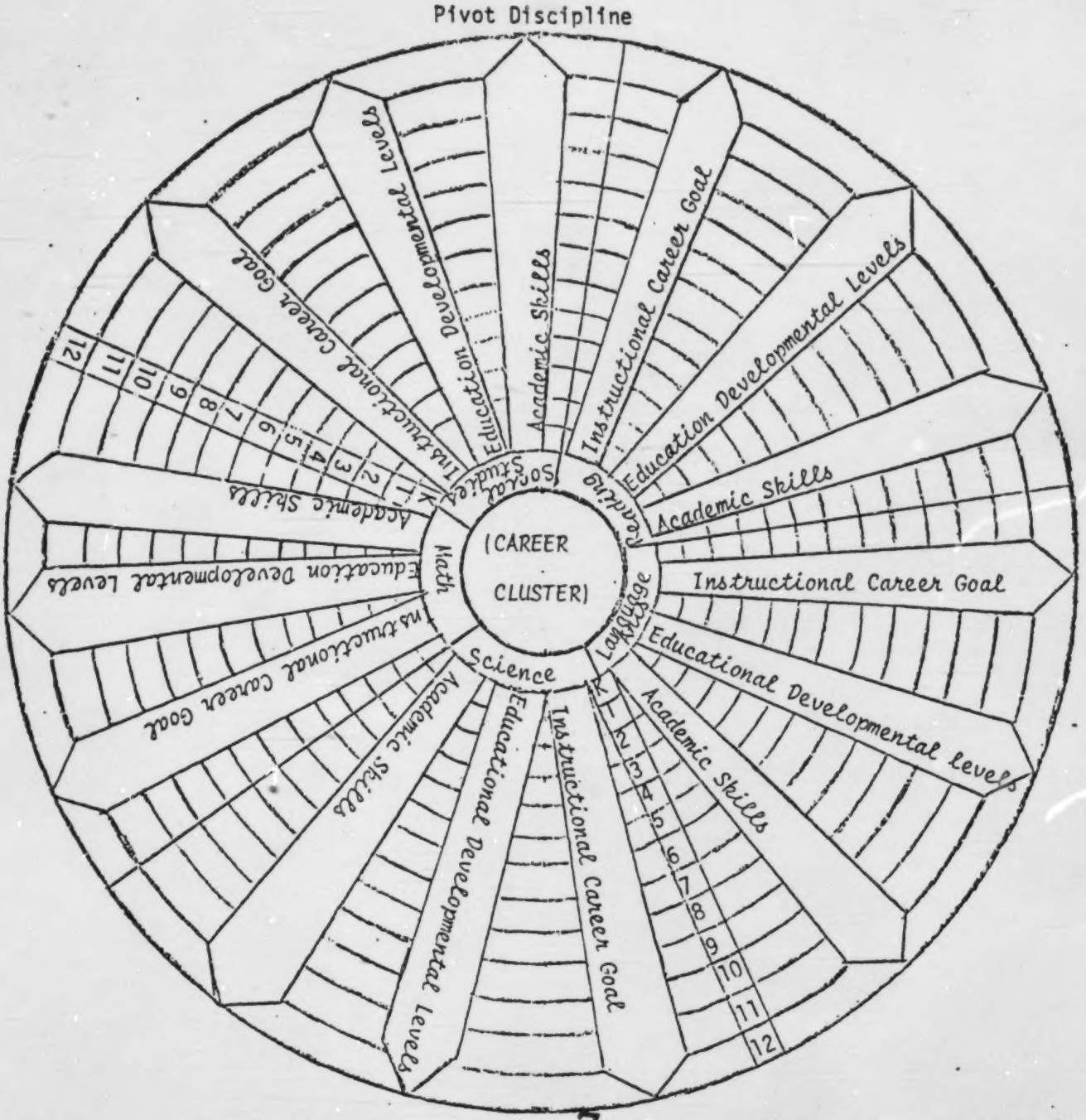

Pivot Discipline
(CAREER CLUSTER)
Reading
Education Developmental Levels
Academic Skills
Instructional Career Goal
Language
Educational Developmental levels
Academic Skills
Instructional Career Goal
Science
Academic Skills
Educational Developmental Levels
Instructional Career Goal
Math
Education Developmental Levels
Academic Skills
Instructional Career Goal
Social Studies
Education Developmental Levels
Academic Skills
Instructional Career Goal
K 1 2 3 4 5 6 7 8 9 10 11 12

TABLE II

ELEMENTARY UNIT DEVELOPED: "HEALTH OCCUPATIONS"

Curriculum Developers

Kindergarten Teachers

Name	District	Building	Spring* 1976	Summer* 1976
Ellen Richards	Girard	Elk Valley	X	
Carolyn Richard	Millcreek	Asbury	X	
Sylvia Conrad	Millcreek	Lakewood		X
Irma Watkins	Union City	Union City Elementary		X
Lila Staub	Titusville	Pleasantville		X

First Grade Teachers

Elizabeth Swift	Girard	Elk Valley	X	
Bonnie Soltis	Northwestern	Northwestern Elem.	X	X
Lorraine Spearhouse	Conneaut	Schafer Elementary		X
Kathy Fennell	Gen. McLane	Edinboro Elementary		X

Second Grade Teachers

Denise Finazzo	Millcreek	Asbury	X	X
Joseph Mineo	Millcreek	Asbury	X	X

Third Grade Teachers

George Simko	Penncrest	Euclid Elementary	X	X
Liz Vardaro	Conneaut	Conneaut Valley	X	X
Virginia Ellis	Crawford Central	Kerrtown	X	X
Mary Werling	Girard	Elk Valley		X

Fourth Grade Teachers

Emilie Hammermeister	Girard	Elk Valley	X	X
Cheryl Weigle	Millcreek	Chestnut Hill	X	X
Sharon Steele	Union City	Union City Elementary		X
Pam Lucas	Millcreek	Grandview	X	

Fifth Grade Teachers

Terry Ruoff	Northwestern	West Springfield	X	X
James Holt	General McLane	General McLane Middle	X	X
Angelo Santoro	Penncrest	Cambridge Springs		X

Sixth Grade Teachers

Name	District	Building	Spring* 1976	Summer* 1976
Nancy Latronica	Penncrest	Cambridge Springs	X	X
Joseph Koczwara	Crawford Central	Cochranton	X	X
Carol Davis	Conneaut	Conneaut Valley		X

* Spring, 1976 = March 4, 1976 - June 10, 1976
(One three hour session per week)

Summer, 1976 = June 14, 1976 - June 30, 1976
(13 days, six hours per day)

TABLE II (continued)

JUNIOR HIGH UNIT DEVELOPED: "COMMUNICATION OCCUPATIONS"

Curriculum Developers

GRADES 7 - 8 - 9

Name	District	Building	Spring* 1976	Summer* 1976
Social Studies				
Tom Hargest	Ft. LePoeuf	Middle School	X	X
Dave Cope	Titusville	Titusville Jr. High		X
Bill Stafford	Ft. LeBoeuf	Middle School		X
Ken Borland	Millcreek	Westlake	X	
Language Arts				
Steve Chizmar	Girard	Rice Avenue Middle	X	X
Jack Power	North East	Junior High		X
Curt Magnuson	Girard	Rice Avenue Middle	X	X
Math				
Ruth Miller	Conneaut	Conneaut Lake	X	X
Kathy McClosky	North East	Junior High		X
Carmen Catherman	Wattsburg	Wattsburg Middle		X
Karen Galubik	Girard	Rice Avenue Middle	X	
Science				
Russ Lasher	Millcreek	J. S. Wilson	X	X
Tom McClosky	Union City	Union City Jr. High	X	X
Karl Engleka	Titusville	Titusville Jr. High		X
Jim Potocki	Corry	Corry Jr. High	X	
Industrial Arts				
Winfred Decker	Fairview	Fairview Middle	X	X
Learning Disabilities				
Mary Jo Schirra	Girard	Rice Avenue Middle		X

* Spring, 1976 = March 4, 1976 - June 10, 1976
(One three hour session per week)

Summer, 1976 = June 14, 1976 - June 30, 1976
(13 days, six hours per day)

TABLE II (continued)

SENIOR HIGH CURRICULUM UNITS REVISED:
BASIC OPERATIONS, TALK, HOUSEHOLD SCIENCE, AMERICAN ELECTIONS

Curriculum Developers

GRADES 10 - 11 - 12

Name	District	Building	Summer* 1975	Summer* 1976
Social Studies				
Robert Sensor	Ft. LeBoeuf	Senior High		X
Rachel Johns	Crawford Central	Meadville Sr. High		X
Merle Darcangelo	Penncrest	Saegertown Sr. High		X
Dick Steinbrink	Ft. LeBoeuf	Senior High		X
Ray Smith	Crawford Central	Meadville Sr. High	X	X
John Daly	Penncrest	Maplewood Sr. High	X	X
Tom Moore	General McLane	Senior High		X
Jim Sisson	Girard	Senior High		X
Language Arts				
Theo Rowland	Crawford Central	Meadville Sr. High		X
Carol Hall	Northwestern	Senior High		X
P.J. Campbell	Penncrest	Cambridge Springs		X
Keith Lane	Wattsburg	Seneca		X
Katherine Kenney	Northwestern	Senior High	X	X
Bill Yahner	Union City	Senior High		X
DaVee Hays	Crawford Central	Meadville Sr. High		X
Dan Scannell	Corry	Corry Sr. High	X	
Math				
Donna Rodgers	Conneaut	Conneaut Lake		X
Marilyn Wintrode	Girard	Senior High		X
Darlene Charcalla	Titusville	Senior High		X
Frank Barthel	General McLane	Senior High		X
Pat Styborski	Union City	Senior High		X
Linda Anderson	Fairview	Senior High	X	X
Jack McIntyre	Union City	Senior High	X	X
Tom Fortin	Union City	Senior High	X	X
Science				
Don Lindenmoyer	Penncrest	Cambridge Springs		X
Ed Payne	Girard	Senior High	X	X
Bill Schubert	Girard	Senior High		X
Barry Bishoff	Fairview	Senior High	X	

Name	District	Building	Spring* 1975	Summer* 1976
Special Education				
Paula Terejko	Crawford Central	Meadville Sr. High		X

* Summer, 1975 = July, 1975 - August, 1975
(25 days)

Summer, 1976 = June 14, 1976 - June 30, 1976
(13 days, six hours per day)

3.) Resource persons were invited to participate in the curriculum development workshop. Sessions were designated for the resource people to discuss occupations within their career area and entertain questions from the curriculum developers. In addition, time was also designated for the curriculum developers to research their respective communities for information about their unit topic, available instructional resources, and community people and places to be utilized for field trips as well as resource persons available to visit classrooms.

Resource persons who participated in the curriculum development workshops are:

a. Ms. Adrian Wirt, Health Educator
Erie County Health Department
Erie, Pennsylvania

b. Mr. Richard Daley, ITV Utilization Specialist
WQLN T.V.
Erie, Pennsylvania

c. Mr. Harold Ott, Associate County Agent
Pennsylvania State Agriculture Extension Service
Erie, Pennsylvania

d. Mr. Leland Foland
Allegheny Airlines
Pittsburgh, Pennsylvania

e. Mary Ann Revierra
Minority Health Education Delivery System
Erie, Pennsylvania

f. Mr. Vincent Buckel
Lyons Transportation
Erie, Pennsylvania

4.) Approval from the Pennsylvania Department of Education granted eligible curriculum writers three (3) inservice credits for completing a minimum of 45 clock hours in curriculum development and research. The research involved search for relevant career education resource materials and personal contacts with resource people and places for future field trips and classroom visits. Fifty-four classroom teachers were eligible and received three (3) inservice credits upon completion of the course. Following is a brief description of the approved curriculum inservice course.

DESCRIPTION OF CURRICULUM DEVELOPMENT INSERVICE COURSE

A. Title of Course:

Career Education Curriculum Development

B. Brief Description:

An intensified and structured writing session will be conducted to develop and revise Career Education Curriculum Resource units - Health Occupations (Elementary, K-6); Communication Occupations, (Jr. High, 7-9); Basic Operations, Talk, Household Science, The American Election System (Sr. High, 10-12).

The course will involve lectures, demonstrations, field trips, and resource persons visiting the class. Although these activities will be on-going through the duration of the course, the major emphasis will be on actual curriculum writing. Each participant will be required to develop a variety of career oriented activities around the skill areas of their particular discipline and code these activities to previously determined teacher and student variables. Resource materials will be researched and evaluation devices determined for each activity.

These curriculum resource units will be available for implementation in K-12 Language Arts, Social Studies, Reading and Mathematics classrooms.

C. Statement of Need:

A proposal from the Intermediate Unit for a comprehensive career education program, K-12 has been approved by the United States Office of Education under Section 406 of PL 93-380 as one of the eighty-one national demonstration models. Career Education Curriculum Resource Units have been developed and implemented throughout the seventeen school districts in the Intermediate Unit region. Based on feedback from implementing teachers, through questionnaires, these resource units need to be updated and revised. The need for career education in the classroom is evident through career education surveys, previous inservice evaluations and results of the Education Quality Assessment (EQA).

D. List of Competencies to be Developed:

1) Educators will become more aware of career education rationale, purpose and concepts.

2) Educators will design an implementation model for these career education curriculum units in their own subject areas.

3) Educators will become more aware of career education resources, both human and physical, and their applicability to specific activities and objectives.

4) Educators will determine appropriateness of evaluation devices to specific career education activities.

5) Educators will develop appropriate career oriented objectives.

6) Educators will develop career oriented activities related to their own areas of expertise.

E. Means of Developing Competencies:

In addition to lectures, demonstrations, field trips and resource persons visiting the class (See Section B), the major teaching strategies to be utilized will involve "hands-on" experiences in curriculum writing. The participants (curriculum writers) will revise two career education resource units and develop one new career education resource unit. The curriculum revision and development will involve analyzing appropriate performance objectives for each grade level. Introductory (teacher centered), developmental (student centered), and culminating activities will be developed for each approved objective to accomodate identified classroom needs, as well as individual student interests and abilities. Researched resource materials, both physical and human, required for completing the activity, and performance evaluation devices for measuring achievement will accompany each activity.

F. Evaluation Method and Criteria:

The competencies stated will be evaluated by: (1) determination by instructors of quality of completed units. (2) in-class observations by instructors.

G. Administrative Responsibility:

Dr. John P. Jarvie, Northwest Tri-County Intermediate Unit

H. Follow-up will be provided by the course instructors to assist participants during implementation and provide information and support.

I. Space will be provided by the Northwest Tri-County Intermediate Unit, as well as curriculum resource materials, such as books, films, study prints, etc. Consumable software, such as pens, pencils, and paper will also be provided.

J. The participants will complete the I.U. #5 Inservice Education questionnaire and upon the completion of training, a developer's questionnarie.

K. The course is designed for teachers, counselors, and administrators. Enrollment will be limited to the seventeen school districts in this I.U.

This course is scheduled to run April 20, 22, 27, 29
May 4, 6, 11, 13, 20, 27
June 3, 10, 17, 24, 30, 1976

Three hours each evening 6:00 p.m. to 9:00 p.m., a total of 45 hours 3 Inservice credits.

Instructors:

Stephen P. Barrett
Barbara J. Wolchik

OBJECTIVE: 4: Provide inservice training for all school district personnel for 17 school districts in the Northwest Tri-County Intermediate Unit Region.

1.) Planning sessions on inservice techniques, strategies and recommendations with:

a. Northwest Tri-County Intermediate Unit Curriculum and Inservice Division.
b. Edinboro State College
c. Third Party Evaluation Team
c. Other OCE Demonstration Projects

2.) Development of inservice plan for the Pennsylvania State Department of Education for inservice credit to participating classroom teachers and counselors. This plan specifically includes orientation of Career Education philosophy; methodologies for implemention; actual implementation of Career Education into existing curriculum. Total involvement time for two inservice credits equal thirty (30) clock hours. Sixteen participants completed this course and received two inservice credits from the Pennsylvania Department of Education. Following is a description of the approved inservice course.

DESCRIPTION OF CAREER EDUCATION INSERVICE COURSE

A. Title of Course:

Orientation and Implementation of Career Education, K-12

B. Brief Description

The purpose of the course is to provide inservice training to all interested school personnel throughout the Northwest Tri-County Intermediate Unit region (17 school districts). The inservice training will include three phases.

1) Orientation - The philosophy and concepts of Career Education as recognized and accepted by the Intermediate Unit staff and the U.S. Office of Education.

2) Methodologies - Techniques to be used for implementation purposes to include curriculum programs and career oriented resources.

3) Implementation - Classroom utilization of techniques as described during the methodology phase.

The program will involve a minimum of thirty (30) contact hours of instruction. We are requesting two (2) inservice credits.

The tentative schedule of sessions are:

October 12, 1975

A.M. - Three (3) hours of instruction (orientation)

P.M. - Three (3) hours of instruction and "hands-on" experience (methodologies)

October 13, 1975 - January 1, 1976

Nine (9) hours of follow-up instruction (orientation and methodologies) to be conducted in small groups.

October 13, 1975 - June 1, 1976

Fifteen (15) hours of: Implementation of Career Education into participant's present school situation.

Total -- 30 hours 2 Inservice Credits

C. Statement of Need:

A proposal from the Intermediate Unit for a Comprehensive Career Education program, K-12 has been approved by the United States Office of Education as one of the national demonstration models. To properly implement career education for the participating students, a considerable amount of inservice training for school personnel is essential.

The need for this inservice program was determined by Career Education surveys, questionnaires and the Education Quality Assessment (EQA).

D. List of Competencies to be Developed:

1) Educators will become more aware of Career Education rationale, purpose and concepts.

2) Educators will become more knowledgeable of the fifteen (15) career clusters expounded upon by the United States Office of Education.

3) Educators will attempt to develop a systematic approach to implementing career education activities.

4) Educators will become more aware of a regional plan for implementation of Career Education in local school districts.

5) Educators will become more aware of career oriented resources, both human and physical, available from a variety of sources.

6) Educators will utilize and implement career education activities in their individual setting.

E. Teaching Strategies to be Employed; Materials, etc.:

1) Computer Based Career Education curriculum units from the Northwest Tri-County Intermediate Unit.

2) Appropriate books and filmstrips from the Career Education Section of the Intermediate Unit library.

3) Career Education specialist from the Northwest Tri-County Intermediate Unit.

4) A follow-up evaluation information sharing session.

F. Evaluation of Competency Achieved by the Participants:

The evaluation will focus on progress toward the course objectives. The instructors will rate the group activities. A log will be kept by each participant as well as the course instructors. Finally, the Northwest Tri-County Intermediate Unit inservice evaluation questionnaire will be completed by all participants.

G. Who will have Administrative Responsibility for the Course?

Dr. John P. Jarvie, Inservice Coordinator
Northwest Tri-County Intermediate Unit

H. Provisions for Follow-up:

Follow-up will be on-going and provided by the course instructors to assist participants during implementation and provide information and support.

I. Resource Available for this Course:

Space will be provided by the Northwest Tri-County Intermediate Unit, as well as curriculum resource units and other resource materials, such as books, films, study prints, etc.

J. What are the Plans for Participant's Evaluation of the Course?

The participants will complete the Northwest Tri-County Intermediate Unit Inservice Education Questionnaire upon the completion of each phase of training.

K. For Whom is the Course Designed? What are the Enrollment Limits, if any?

Orientation and Implementation of Career Education, K-12 is designed for all elementary and secondary educators, guidance counselor, administrators and interested community members. Enrollment is limited to the 17 school districts in the Northwest Tri-County Intermediate Unit.

L. Have you made an agreement with an institution of higher education to grant college credit? If so, name the college or university, give the number of credits, identify the college contact person and attach a copy of the letter of agreement.

Not Applicable

3.) Inservice Workshops: Career Education philosophy, methodology, and implementation procedures conducted by project staff for school districts throughout the Intermediate Unit area during the 1975-76 school year.

Date	District	Attendance
September 18, 1975	4	37
October 13, 1975	1	21
October 21, 1975	6	34
October 29, 1975	6	26
January 26, 1976*	2	33 (two sessions)
March 3, 1976	5	17
March 19, 1976	8	59 (two sessions)

*One of the January 26th workshops was held by request to orient teachers and administrators to methods and procedures for developing curriculum (incorporating career concepts with respective disciplines).

Evaluation results of the inservice workshops indicated that there was much interest and enthusiasm sparked by the workshop participants. However, little administrative participation at the workshops resulted in the need for future involvement, commitment and support toward Career education in each respective school district by administrators and school board members.

4.) Continuous follow-up inservice sessions conducted for all school districts in the Intermediate Unit region during the 1975-76 school year.

The follow-up inservice sessions were held by request at the individual school districts. These sessions showed that career education was beginning to become a major priority within the school districts! Since these sessions were, for the most part, follow-up sessions to the general inservice workshops, focus was placed primarily on specific methodology for implementation of Career Education curriculum materials. School districts and buildings which requested these follow-up inservice sessions include:

School District	Building
Conneaut	Conneaut Valley Elementary
Crawford Central	Kerrtown Elementary Cochranton Elementary Crawford Central Administration
Fairview	Manchester Elementary Chestnut Elementary
Fort LeBoeuf	Fort LeBoeuf High School
Girard	Girard High School Elk Valley Elementary
Harborcreek	Fred S. Clark Elementary (Elementary Principals) Rolling Ridge Elementary
Millcreek	Millcreek Intermediate Asbury Elementary Chestnut Hill Elementary Grandview Elementary Lakewood Elementary
North East	North East High School
Northwestern	Northwestern Elementary East Springfield Elementary West Springfield Elementary Northwestern Junior High
PENNCREST	Maplewood High School Saegertown Middle School Townville Elementary
Union City	Union City Area High School Union City Elementary
Wattsburg	Seneca High School Green Township Elementary Wattsburg Central Elementary
Warren	Tidioute High School Jefferson Elementary

5.) Day to day individual and small group consultations with teachers, counselors and administrators on implementation and ordering procedures.

OBJECTIVE 5: Individualize the learning program for each student to meet his needs, interests and abilities.

1.) The major activity for this objective was actual implementation of the career education resource units into classroom throughout the Intermediate Unit region.

The computer facilities at Edinboro State College, Edinboro, Pa. were utilized in the implementation of the resource units. The methodology of the curriculum model utilized the computer as a tool to aid the teacher in pre-planning and individualizing career education in the classroom. The resource units generated by the computer provided classroom teachers with objectives, suggested activities, content items (stimulating thoughts; statements of fact), instructional resources (physical and human), and evaluation devices about the specific activities. All classroom teachers who utilized the career education resource units were oriented to the unit developmental format (Appendix II) prior to implementation.

For a review of the professional and individual variables that the curriculum units were written toward and the teacher and student request forms necessary for implementation, refer to Appendix I.

Following are samples of suggested activities which have been coded into the computer:

UNIT TITLE: "HEALTH OCCUPATIONS"

OBJECTIVE: Identify several personal characteristics, locations, and activities that can be used to describe life styles of people in the health occupation cluster.

Sample Activity 1

Grade Level: 3
Study Area: Mathematics
Academic Skill: Concepts of Telling Time
Large Group Culminating - Game

There are many people who work in health careers to keep us out of the hospital. These people usually work for the community health services. Some of the job titles are: Community Services and Health Education Officer, Public Health Educator, Public Health Nurse, Sanitarian, Home Health Aid, Communicable Disease Specialist, Environmental Protectionist, Aquatic Biologists.

Discuss with the children the people who work in the jobs at the Public Health Department. Then play a game to practice telling time, using two teams and two large clocks. (Hands should be removable)

The teams are the Health Department and the Germs. Each team has a clock. Teams line up in double lines. Using time flash cards, the teacher holds up a time problem. (8:15, 7:30, etc.) The card means that there is a health alert in the community and very little time to solve the problem. If the two health workers can get the hands of

the clock in place correctly, before the germs, then the crisis is controlled. But if the germs are first, the community has a health problem. You may wish to map sections of your community and place a marker (H for Healthy) or (G for Germs) on each section as the teams answer the problems. If one team has a marker in each section of the community, then they are the winners.

The teacher may wish to prepare short stories (ahead of time) about the various health problems that may arise in the community. Read these before each turn. An example: There is a health alert at Community Creek. Peter Pollution (the germ) is making the water unsafe to drink. Send an Environmental Protectionist to the problem area immediately. Time is of the utmost importance.

Resource:

1. Resource Materials: time flash cards, two clocks with removable hands. map of community

2. Resource Place: For more information on these jobs, write: Erie Public Health Department, 606 West 2nd Street, Erie, Pa. 16507.

Evaluation:

Selective Observation - Game; Criteria:

1. Good Sportsmanship
2. Fair Play
3. Enthusiasm
4. Completeness
5. Ability to follow directions

Sample Activity 2

Grade Level: 3
Study Area: Social Studies
Academic Skill: Learning About Social and Emotional Health
Developmental Individual; Observation

Take a good look at yourself.

The people who work in health jobs have many different personalities. The medical office has a person who sits at the front desk. The job is to greet people and to make them feel relaxed. During daily work they see people who show all kinds of feelings. Some show sadness, loneliness, fear, anger, happiness, worry, or joy when they come into the medical office.

How good are you at identifying feelings? Cut magazine pictures of people showing different kinds of feelings. Label your pictures. Get a mirror and see if you can make your face show the same feeling as that on the different pictures. How does the face make you feel?

Resource:

1. Magazines: any old magazines found in school library or at home.

Evaluation:

Rating Scale - Observation:

Criteria: Rate the degree of

1. Understanding
2. Accuracy
3. Attentiveness
4. Utilization
5. Fulfillment of objective
6. Attention to details

Breakdown of Career Education Curriculum Resource Unit usage is as follows:

	Teacher Usage	Individual Student Usage
Elementary	136	841
Junior High	31	95
Senior High	93	223
TOTAL	260	1,159

OBJECTIVE 6: Provide a vehicle for coordinating life/space concepts, instructional career goals and academic skills around career cluster themes.

1.) The major activity accomplished to achieve this objective was the development and revision of the career education curriculum resource units. The specific tasks included with this activity are listed under Section Nine, Objective Three of this report.

OBJECTIVE 7: Demonstrate the feasibility of using existing computer facilities for storage and retrieval of career oriented curriculum.

1.) Developed a computer program (See Appendix II for Unit Developmental Format) for storage of career education curriculum resource units and retrieval of selected materials within these resource units. The project utilized existing computer facilities at Edinboro State College, Edinboro, Pa. to accomplish the tasks in this objective.

2.) Re-coded four career education senior high curriculum resource units and coded one junior high and one elementary resource unit into the computer in accordance with professional and individual learner variables e.g. instructional level, achievement level, general interest area, study area, etc. (See Appendix I).

3.) Retrieval of career education curriculum resource units from computer and delivery to school buildings as per teacher/student request. The project utilized existing delivery services provided by the Northwest Tri-County Intermediate Unit's Instructional Materials service to accomplish this activity. Drivers pick up and deliver instructional materials two times per week at each building of all 17 school districts within the Intermediate Unit region.

OBJECTIVE 8: Provide a comprehensive career education curriculum that is transportable to regional, state and national education agencies.

1.) Demonstrate the transportability of the curriculum model via a computer retrieval system to 17 school districts in a three county area.

2.) Several meetings with Pennsylvania Department of Education and Intermediate Unit Directors to discuss career education, the demonstration project and possible plans for future state-wide (through Intermediate Units) computer terminals for material transportability.

3.) Through the utilization of a computer retrieval system the career education curriculum resource units could be easily transported to other state and national education agencies through statewide and national computer networks.

OBJECTIVE 9: Increase both the acceptability and the effectiveness of the school counselor.

1.) Individual and small group inservice sessions held with counselors throughout the intermediate unit region. Discussions centered around career education philosophy and the role of the guidance counselor in career education.

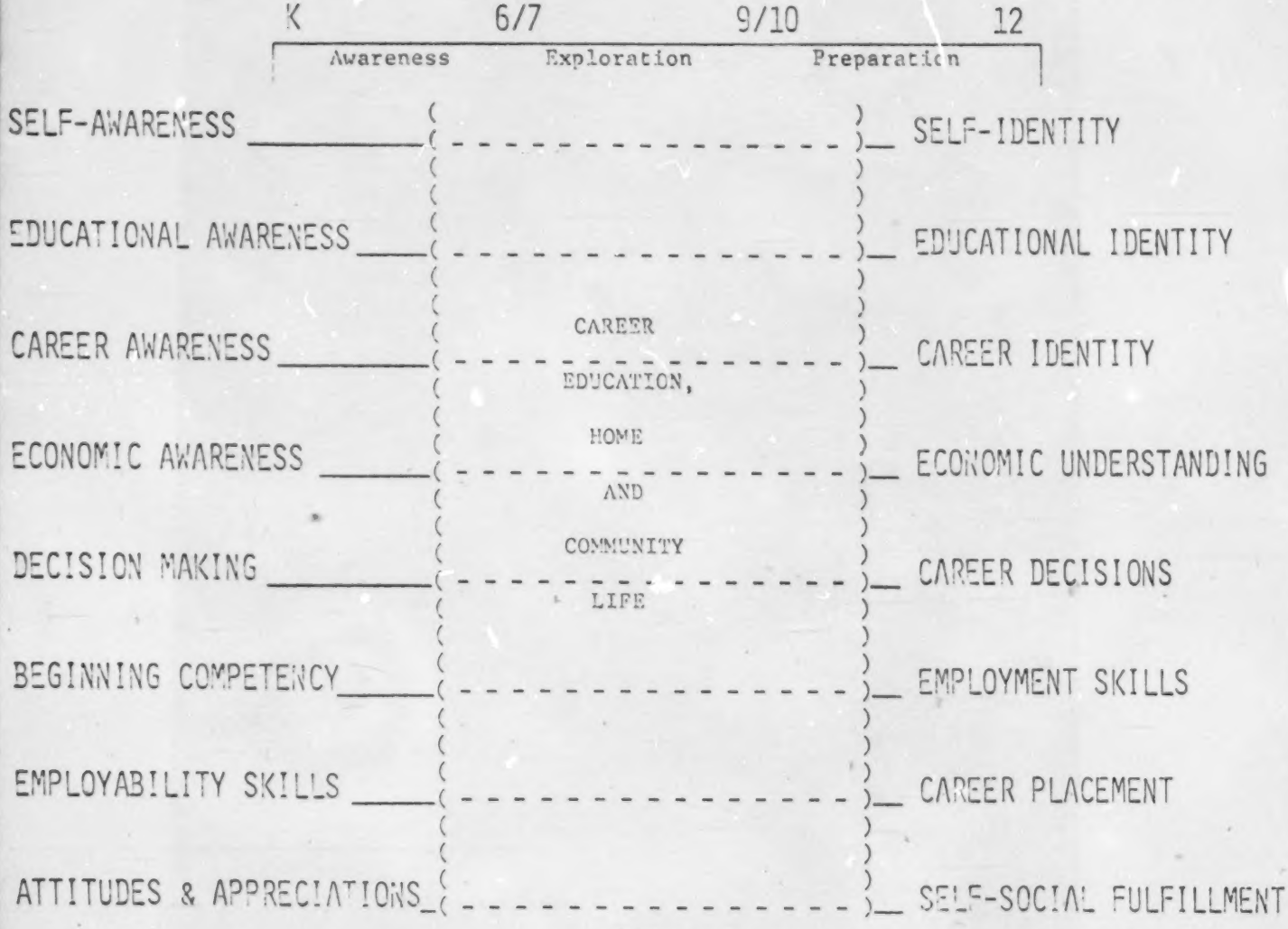
2.) Throughout teacher inservice sessions and individual and small group consultations the project staff emphasized:

a. teacher-counselor collaboration
b. the role of the counselor as liaison between the school and community

3.) The career education curriculum resource units contained suggested activities for teachers and students to utilize the counselor as a resource person visiting the classroom and organizing field trips, etc.

OBJECTICE 11: Emphasize "work" as being possible, more meaningful, and more satisfying for each individual thoughout his or her lifetime.

ELEMENTS OF CAREER EDUCATION



(Houck, September 1973)

10. Project Participants:

For the final summary of participants who were directly served by the project, refer to the attached form entitled "Career Education Program: Participant Summary".

11. Evaluation

EVALUATION PLAN

The evaluation plan was basically one of measuring the effectiveness of the K-12 Career Education Curriculum Model. The main thrust of the evaluation addressed itself to measuring the program's progression toward the stated objectives of the project. Inasmuch as learning activities and methodology in the project are crucial teacher and pupil components, an evaluation using standardized tests and expert opinion was undertaken. This aspect of the evaluation dealt primarily with the specific question of the effectiveness of the career education program on career knowledge, reading skills, and mathematics skills.

Career awareness, career exploration, and career preparation of pupils at the preschool, primary, intermediate, junior high school, and senior high school were evaluated. Standardized tests, relating to academic achievement in reading, mathematics, and career knowledge, as well as evaluator designed tests were administered to assess progress toward project objectives.

Comparability of pupils in the project with pupils not participating in the project was undertaken. A comparable control group was identified at each grade level. To insure that the groups were equated when the project was initiated, pretesting was conducted in the areas of career knowledge, reading, and mathematics achievement. Thus, evidence toward stated objectives was ascertained. This assumption is based on the premise that the objectives of the project are valid, inasmuch as they were accepted as the basis for funding the project.

The development of a positive self-concept is an important goal of the project. Insights into achievement of this objective was determined through expert opinion, analysis of teacher attitude, and appropriateness of learning materials as indicated by student responses.

As a sample of the 17 school districts in Intermediate Unit #5, three districts were chosen, (Girard, Fairview and Millcreek Township) to participate in the testing phase of the project. As a group, these districts were considered to be representative of all districts in the Intermediate Unit.

Research Design:

A Systems Approach was used to measure progress. Questionnaires and opinionaires were administered to teachers and administrators. Items and statistical analyses were made of the tests employed in the study as related to project objectives. Quantitative data was evaluated for the objectives.

CAREER EDUCATION PROGRAM: PARTICIPANT SUMMARY

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C. 20202

CAREER EDUCATION PROGRAM

PARTICIPANT SUMMARY

NOTE: Participants include those DIRECTLY served by the project or, in the case of most parents and persons in the business/labor/industry community, who actively assist in project implementation. "Actively assist" includes efforts such as serving as resource persons, serving on Advisory Groups, providing work experience, etc.

FORM APPROVED
OMB NO. 51-R1187

NUMBER OF PARTICIPANTS (see NOTE above) WHO ARE	RACE/ETHNICITY (all Participants including Handicapped, Gifted and Talented, and Low Income)						OF THE TOTAL (column (6)) NUMBER WHO ARE			OF THE TOTAL (column (6)) NUMBER WHO ARE	
	AMERICAN INDIAN OR ALASKAN NATIVE (1)	ASIAN OR PACIFIC ISLANDER (2)	BLACK/ NEGRO (3)	CAUCASIAN/ WHITE (4)	HISPANIC (5)	TOTAL (sum of columns (1) through (5)) (6)	HANDICAPPED (7)	GIFTED AND TALENTED (8)	LOW INCOME (9)	MALE (10)	FEMALE (11)
STUDENTS											
ELEMENTARY (K-6)			2	838	1	841	16	9	83	400	441
MIDDLE/JUNIOR HIGH (7-9)				95		95			4	39	56
SENIOR HIGH (10-12)			3	220		223	1		70	138	85
2-YEAR COLLEGE											
4-YEAR COLLEGE											
ADULTS (non-matriculated)											
SUB-TOTAL			5	1,153	1	1,159	17	9	157	577	582
EDUCATIONAL PERSONNEL											
TEACHERS				260		260				175	85
COUNSELORS				23		23				14	9
ADMINISTRATORS				17		17				17	0
MEMBERS OF THE BUSINESS/ LABOR/INDUSTRY COMMUNITY				225	1	226					
PARENTS				136		136					
OTHER (specify)											
TOTAL			5	1,814	2	1,821					

OE FORM 467, 3/74

A basic experimental control group, pretest - posttest design was used in this study. The pretest was utilized to determine if the experimental and the control groups were equal in the areas of career knowledge, reading skills, and mathematical skills. The posttest results formed the basis upon which judgements were made as to the effectiveness of the experimental program. Schools were selected from the 17 school districts comprising Pennsylvania's Intermediate Unit #5 and were considered to be representative of the schools in this geographic area. The grade levels selected were representative of the preschool, primary, intermediate, junior high and senior high school levels.

Evaluation Instruments:

A. Reading and Math

1. Gates MacGinitie Reading Test
2. Iowa Test of Basic Skills (Reading and Math) Level 8, Form 5
3. Iowa Test of Basic Skills (Reading and Math) Level 10, Form 5
4. Stanford Achievement Test (Reading and Math) Form B
5. STEP-SCAT Achievement Test (Reading and Math) Series II

B. Career Education

1. Individualized Career Education Picture Test
2. Career Awareness Inventory
3. Career Awareness Inventory (Form A-1)
4. Career Maturity Inventory (Form A-1)
5. Assessment of Career Development

C. Additional Evaluation Instruments

1. Questionnaires
2. Opinionaires
3. Interviews
4. Observations

Treatment of Data

The results of the evaluation were used to ascertain the following:

1. Progress in relation to the objectives of the project.

2. Comparison of experimental and control group results as to their awareness of the concept questions.

3. An assessment of the project's influence on the self-concept of students.

4. The development of career awareness, career exploration, and career selection through the program.

Evaluation Activities:

A. Pretest Activities

1. Identified experimental and control groups by a random selection of schools and classrooms in the Intermediate Unit region.

2. Administered pretests at each identified school and grade level:

Grade Level	Math and Reading Achievement	Career Education
K	None	None
2	Iowa Test of Basic Skills	None
4	Iowa Test of Basic Skills	Career Awareness Inventory
9	Stanford Achievement	Career Awareness Inventory
10	STEP-SCAT Achievement	Assessment of Career Development

These tests were administered by the classroom teacher at the elementary level and by guidance counselors at the junior high and senior high levels.

3. Tabulating the results of the pretesting by third party evaluators. (For Pretest Scores, Refer to Appendix III).

4. Determination of differences between the pretesting of experimental and control groups. (For a comparison of pretest scores, refer to Appendix IV)

B. Posttest Activities

1. All posttesting was completed during the time period of May 15, 1976 - May 30, 1976. Classroom teachers, guidance counselors, and the project evaluators were involved in the administration of the posttests.

The posttesting program included:

Grade Level	Math and Reading	Career Education
K	Gates-MacGinitie Reading Test	Individualized Career Test
2	Iowa Test of Basic Skills	Individualized Career Test
4	Iowa Test of Basic Skills	Career Awareness Inventory
9	Stanford Achievement	Career Maturity Inventory
10	STEP-SCAT Achievement	Assessment of Career Development

It should be noted that at the ninth grade level an adjustment was made in the area of career knowledge. In the pretesting, the Career Awareness Inventory was administered. Upon examination of the pretest results, the evaluators judged that this test was not designed for students of this grade level; and, substituted the Career Maturity Inventory in its place.

It was further judged that due to the degree to which the experimental and control groups were equated, the original design to compare gain scores of the two groups was necessary. In place of gain scores, a "t" test analysis of the posttest scores was instituted. The "t" test analysis was used to compare reading achievement, mathematics achievement, and career knowledge for each grade level except fourth. At the fourth grade level, an analysis of covariance was used to compare mathematics achievement and career knowledge since the pretest results for these two areas indicated a significant difference in favor of the experimental group.

2. Posttest results are as follows:

Kindergarten (For Kindergarten Posttest Scores, refer to Appendix V)

- Readiness - Although the experimental group mean was two points higher than the control group mean, no significant differences existed between the groups.

- Career Awareness/Career Knowledge - The experimental group achieved a mean of 16.8 compared to the control group mean of 13.73. The differences of the mean scores of the two groups are considered significant at the .05 level of confidence in favor of the experimental group.

Grade 2 (For Second Grade Posttest Scores, refer to Appendix VI)

- Reading and Mathematics Achievement - The differences which existed were minimal when mean grade equivalent scores were compared.

- Career Knowledge - The experimental group mean of 17.67 was significantly higher than the control group mean of 11.87.

Grade 4 (For Fourth Grade Posttest Scores, refer to Appendix VII)

- Reading and Mathematics Achievement - Though the experimental group attained a mean grade equivalent score of 5.75 as compared to the control group mean of 5.19, this difference was not great enough to produce a significant "t" value.

- Career Knowledge - The calculated F value of .0062 is less than one (1), which indicates the differences in the adjusted mean scores of the two groups is not significant.

Grade 9 (For Ninth Grade Posttest Scores, refer to Appendix VIII)

- Reading and Mathematics Achievement - Minimal grade equivalent differences exist in reading and math.

- Career Knowledge - Minimal raw score differences exist in the Career Knowledge area.

Grade 10 (For Tenth Grade Posttest Scores, refer to Appendix IX)

- The mean score in each of the areas differed, but not to the degree that the differences are considered significant.

C. Evaluation of Inservice Activities

1. Questionnaires were distributed to all participants in attendance of the major inservice workshops provided by the project staff.

2. A summary of the results of the questionnaire can be found in Table I:

TABLE I

Summary Statistics for Orientation Workshops

Questions	Highly Significant	Moderately Significant	Not Significant
Did the workshop increase your awareness regarding the overall regional plan to implement career education in local districts?	50	63	5
Did you become more knowledgeable concerning methods by which a career education program might be implemented into your school?	38	89	11
How beneficial do you rate the workshop?	41	87	10

	Excellent	Good	Average	Fair	Poor
What is your overall rating of the workshop?	31	75	21	8	2

3. Workshop Conclusions

The teachers, administrators and counselors were generally receptive to the orientation.

The evaluators felt strongly that the in-service programs were well planned and effective. They also felt that with the constant assessment built into the program, the diffusion of career education will continue to become more effective.

D. Evaluation of Curriculum Development Activities (Refer to Table II for Developer Questionnaire)

An analysis of the responses to the Developer Questionnaire indicated that teachers reacted favorably to all questions concerning the project, with the exception of question five. Questions one through twelve solicited responses on a five-point scale from "Strong Agreement" to "Strong Disagreement". The one exception was question five which indicated a "Neutral" response. This response was natural inasmuch as the units were developed during the summer when children were not available.

While an analysis indicated that teachers reacted favorably, there were somewhat marked differences between elementary and secondary teachers in responding to question two, four, nine, ten and twelve. In question two, the majority of elementary teachers indicated they were given ample opportunity to define the scope and focus of the unit. In response to question four, elementary teachers felt more positively that resources were available. Question nine indicated more elementary teachers and secondary teachers felt that their activities were significant and meaningful to the project. Responses to question ten showed fewer secondary teachers strongly agreed that the philosophy and concepts of career education were taken into consideration in the development of the resource unit. Question twelve showed more elementary teachers strongly agreed that the unit was broad and extensive enough to meet the needs and interests of individual students.

Question thirteen through seventeen were "Yes" - "No" questions and a majority of the developers indicated "Yes" to these questions. An analysis of the responses indicates a positive attitude toward the project objectives, classroom procedures, and the content of career education from kindergarten through the senior high school.

While the preponderance of the responses were "Yes" for questions thirteen through seventeen, there was a difference between elementary and secondary teachers' opinions. Elementary teachers responded "Yes" in greater percentages than did secondary teachers. The most marked difference was in Question 15, which referred to altering classroom methodology. Fewer secondary teachers responded "Yes" to this question.

A statistical summary of the results of this questionnaire can be found in Table II.

Written comments of the developers were generally favorable in nature. Many comments indicated that through experiences in the project, teachers having utilized the methodology used in the project are further aware of the individual needs of pupils and recognize the desirability of developing the individuality of students. Multiple responses from teachers indicated that they were aware of the following: the importance of career education, the importance of working with students who are not college bound, the desirability of a more individualized approach to teaching, different approach to solving instructional problems, and curriculum construction. These responses, along with many others, indicate that progress is being made toward the stated objectives of the project.

TABLE II

Summary - K-12 Career Education Developer Questionnaire

No.	Question		Strong Agreement	Mild Agreement	Neutral	Mild Disagreement	Strong Disagreement
1.	I was given sufficient information about the project (i.e., topic and format) prior to beginning my work on the units	Elementary	8	11	0	2	0
		Secondary	12	17	5	7	1
		Total	20	28	5	9	1
2.	I was given ample opportunity to define the scope and focus of the Career Education Unit which I helped develop.	Elementary	15	3	3	0	0
		Secondary	12	19	9	5	1
		Total	27	22	12	5	1
3.	There was an atmosphere of mutual respect and cooperation between myself, the project staff, and consultants.	Elementary	19	1	0	0	0
		Secondary	33	11	1	1	0
		Total	52	12	1	1	0
4.	There were available, most of the human and material resources I felt necessary for developing the unit.	Elementary	10	8	2	0	1
		Secondary	10	15	10	9	2
		Total	20	23	12	9	3

TABLE II (Continued)

No.	Question		Strong Agreement	Mild Agreement	Neutral	Mild Disagreement	Strong Disagreement
5.	There was an opportunity to test ideas regarding the unit in real situations or obtain factual information concerning their worth or effectiveness.	Elementary	6	4	4	5	3
		Secondary	2	13	14	14	3
		Total	8	17	18	19	6
6.	Progress was continually assessed by all active participants throughout the program.	Elementary	4	13	3	0	1
		Secondary	8	30	8	3	0
		Total	12	43	11	3	1
7.	There was adequate coordination among the various groups working on different units.	Elementary	11	5	2	3	0
		Secondary	14	16	9	6	1
		Total	25	21	11	9	1
8.	There was adequate coordination among those working on a single unit within the development phase of the project.	Elementary	16	3	2	0	0
		Secondary	25	16	2	3	0
		Total	41	19	4	3	0

TABLE II (Continued)

No.	Question		Strong Agreement	Mild Agreement	Neutral	Mild Disagreement	Strong Disagreement
9.	I felt my activities were significant and meaningful to the project.	Elementary	16	5	0	0	0
		Secondary	15	25	4	0	0
		Total	31	30	4	0	0
10.	The philosophy and concepts of career education were taken into consideration in the development of the resource unit.	Elementary	17	4	0	0	0
		Secondary	24	17	3	1	0
		Total	41	21	3	1	0
11.	The make-up of our group was sufficiently diverse to provide an adequate cross-section of opinion and expertise.	Elementary	15	6	0	0	0
		Secondary	27	25	1	3	0
		Total	42	31	1	3	0
12.	The unit was broad and extensive enough to meet the needs and interests of individual students.	Elementary	14	5	1	1	0
		Secondary	15	24	5	2	0
		Total	29	29	6	3	0

TABLE II (Continued)

No.	Question		Yes	No
13.	As a result of your experience in this project, do you possess different ideas, persuasions, and viewpoints about career education? If so, please list some examples.	Elementary Secondary Total	20 37 57	1 8 9
14.	As a result of your experiences in this project, are you more aware of problems and potentials of career education as this relates specifically to your own school and class room? If so, what kind of problems?	Elementary Secondary Total	21 40 61	0 7 7
15.	As a result of this experience, do you anticipate your classroom methodology will be altered? If so, please describe.	Elementary Secondary Total	19 29 48	1 16 17
16.	As a result of this experience, are you more willing to work with others to solve other instructional problems? If so, what type of instructional problems?	Elementary Secondary Total	16 35 51	3 10 13
17.	In your opinion, in building the resource unit, was concern given for individual pupil differences and growth? To what degree?	Elementary Secondary Total	19 42 61	2 2 4

E. Evaluation of Career Education Implementation Activities
(Refer to Table III for User Questionnaire)

Responses to the User Questionnaire indicated that in general teachers reacted favorably to the materials, methodology, and the content of the units. There was a consensus of opinion on questions one through eleven, which were "Yes" - "No" in nature. Favorable responses were revealed in all questions one through eleven.

The written comments of users were, in general, favorable; however, teachers indicated that they needed more specific help in using the guides, implementing specific lessons, and obtaining instructional resources.

Questions twelve through fifteen were open-ended in nature. An analysis of the responses to these questions revealed that teachers who used the units were interested in career education for their students and in improving the education in their classes. In the judgment of evaluators, these criticisms are considered normal and natural.

A statistical summary of the results of this questionnaire can be found in Table III.

TABLE III

Summary Statistics for User Questionnaire

No.	Question		Yes	No
1.	In your opinion was this unit oriented toward career awareness, exploration or preparation for your students?	Elementary Secondary Total	11 10 21	0 1 1
2.	Were you given sufficient information and guidance prior to using and during the use of the units? If no, please explain.	Elementary Secondary Total	8 8 16	2 2 4
3.	Would you consider a laboratory, demonstration class, or other inservice training of value in helping you to learn how to implement units? Please explain.	Elementary Secondary Total	9 9 18	2 2 4
4.	Do you possess different ideas, persuasions, and viewpoints about career education and its processes since your experiment with the guide and unit? Please explain.	Elementary Secondary Total	9 7 16	3 2 5
5.	Are you more aware of problems in education and career education specifically in your own school and classroom as a result of using the guide? If yes, please explain.	Elementary Secondary Total	6 6 12	4 3 7
6.	Did you select and request individual student print-outs? If so how many? If not, why?	Elementary Secondary Total	5 7 12	4 4 8
7.	In your print-out for individual students, were the number of suggestions relating to content, activities, materials, and measuring devices sufficient? If no, please explain.	Elementary Secondary Total	6 9 15	1 0 1

TABLE III (Continued)

No.	Question		Yes	No
8.	Did you experience difficulty in obtaining the materials listed in the unit? If yes, please explain.	Elementary	3	7
		Secondary	2	6
		Total	5	13
9.	If you did not use individual student print-outs, did you find the pre-planning guide helpful? If so, in what way?	Elementary	4	0
		Secondary	5	1
		Total	9	1
10.	Are you planning to use this career unit again?	Elementary	11	0
		Secondary	7	3
		Total	18	3
11.	Would you like to use other career units designed within this format?	Elementary	9	2
		Secondary	6	1
		Total	15	3

F. Evaluation of Administrator Activities (Refer to Table IV for Administrator Questionnaire)

An analysis of the responses from twenty administrators indicated that, in general, they have been adequately informed as to the format and progress of the K-12 Career Education Project in their respective schools. However, a minority of the administrators indicated that they desired more information concerning the project. Respondents indicated that strengths of the program were in the individualization of instruction, the easy accessibility of the information via the computer, and that the project was a bold attempt to provide career education for a wide range of students. They also felt that the methodology in the project compared favorably with other teaching techniques used in their schools.

Administrators recommended that improved dissemination of the units, workshops, greater student involvement on actual job experiences, and greater involvement of administrative staffs of the various schools would strengthen the project. They also felt that students would be more interested in the project if more of the units were revised to reflect present day student interests. Administrators felt teachers need additional concrete materials and resources locally as well as more assistance in planning and implementing activities in the classroom.

A listing of typical responses to this questionnaire can be found in Table IV, "Summary Comments for Administrator Questionnaire."

TABLE IV

Summary Comments for Administrator Questionnaire

No.	Question
1.	In your opinion, what is the status of Career Education in your school district? Selected Comments: Our district has developed a plan for next fall that meets the needs and desires of the teacher. It is presently being used by several teachers for both remedial and supplemental work in their classrooms. As such, we do not have a Career Education Program. At present we have nothing happening on a large scale. The high school offers a career planning course to tenth graders and students involved in work experience program. The amount of emphasis is dependent on the teacher and/or department. It seems to be a hit and miss approach with some doing much and others doing very little or nothing. A lack of interest on the part of many staff members has limited the program.
2.	Do you feel that you and your staff have been adequately informed as to the format and progress of the Intermediate Unit #5 Career Education Project that is available to use in your schools? Selected Comments: Yes, informed, but not proficient in technique at this time. Yes, through our director. We have been informed as to the program of Intermediate Unit #5 and the staff has been very cooperative. Yes, at two different times I had an Intermediate Unit #5 person talk to the faculty at a scheduled meeting.

TABLE IV (Continued)

No.	Question
3.	Do you feel that the Intermediate Unit's Career Education Program meets the needs of your school district's goals in career education? Selected Comments: For the present time, yes. As more teachers incorporate this in the curriculum, more units will need to be added. Yes, as far as it goes. There are some gaps, particularly at the Junior High Level. These resources serve as a springboard to further investigate, which is its primary purpose. No! You don't have a program for a school to use only resource units. Before these are of any use a lot of curriculum work must take place. As a teacher, it meets my teacher goals in developing career oriented students. Still experimental!
4.	In your opinion, what are the strong points of this Career Education Program? Selected Comments: The program helps the teacher to individualize instruction and appeal to the individual interests of the class. Definite resource materials - relative to the student's interests - progression at own speed; termination of project as the student if no longer interested in any particular aspect. The emphasis of relating careers to all subject areas is good. Ready access to information concerning to all careers for young men and women. High interest on their level. I like the USOE clusters approach. It defines specific jobs and places them in handy compartments.

TABLE IV (Continued)

No.	Question
5.	In your opinion, what areas of the Career Education Project should be altered or improved to meet your needs? Selected Comments: More units developed. Your program is not understood by most teachers. Because of some really good E.Q.A. scores on career education, we can't think of any necessary alternations. Perhaps less emphasis upon formal classes in career education with more emphasis on mini-courses in careers which might become a part of regular class activities. More contact with Intermediate Unit #5 Career Education Project personnel would be desirable. Money should be earmarked for classroom projects such as films, kits, and field trips to enlarge upon the career.
6.	How do you react to the methodology incorporated into the project? Is it a workable approach to use in the classroom? Selected Comments: Perhaps more teacher education in setting up goals is needed. We found that using only communications as a goal greatly limited the activities suggested. Yes, it rests upon the teacher, however, to present it properly, and if the teacher feels that it is just a matter of handing out the forms, then it is all lost. The teacher should lead the interest parade. This approach is definitely workable. Concerned as to how much material is needed in our libraries. Good methodology and can be learnable. This approach is definitely workable; however, the initial selection of units needs to be presented almost individually to teachers.

SUMMARY OF EVALUATION

The field testing of students in the K-12 Career Education Project revealed a variety of results.

In the areas of reading and mathematics achievement, minimal differences between the two groups was reported. It should be emphasized that the career units did not provide specific provisions toward teaching these subject areas in a direct fashion. Emphasis must also be directed to the fact that all groups made gains in achievement during the academic year but that it was not possible to show that through the use of the career units greater gains were made by the experimental group.

In the area of career education, the experimental kindergarten and second grade groups scored significantly higher than their control groups. At the fourth, ninth, and tenth grade levels no significant differences between the groups could be detected. The evaluators were pleased that all students improved in the area of career knowledge within the duration of the project. They also felt that the significant gains made by the experimental kindergarten and second grade groups might be attributed to the fact that students were exposed to many more units than those at the remaining levels,where significance was not achieved.

In summary, the evaluators felt that in the limited amount of time during which the students were exposed to the project, the benefits of career education could not totally be assessed by the testing program.

Satisfactory progress has been made toward the objective of diffusion of the K-12 Career Education Project. Inservice workshops have been well organized, professionally presented, and contained the fundamental ideas of career education. Administrators and teachers were generally receptive to the orientation. Feedback from administrators and teachers was incorporated in ensuing workshops within Intermediate Unit #5.

Teachers who worked as developers of units in the project reacted favorably to the questions asked in the developer questionnaire. The one exception concerned was the lack of opportunity to test learning activities in real situations. Since most of the curriculum development took place during the summer months, the opportunity to test learning activities in real situations was almost impossible. Written comments by the developers indicated that teachers felt that the scope and focus of the units reflected excellent learning opportunities for children. Differences between the reaction of elementary teachers and secondary teachers were found in resources being available in the respective schools.

User questionnaire responses indicated to the evaluators that, in general, teachers had a favorable reaction to the materials, methodology, and content of the units in the project. Teacher users felt that they needed more specific help in using the guides, implementing specific lessons, and in obtaining instructional resources.

Administrators responded favorably to the format and methodology of the project. Respondents indicated that strengths of the program were in the individualization of instruction, the easy accessibility of the information via the computer, and that the project was a bold attempt to provide career education for a wide range of students. Administrators felt teachers need additional concrete materials and resources locally as well as more assistance in planning and implementing activities in the classroom.

12. Anticipated Changes and/or Problems

The original evaluation plan as approved in the project proposal did not reflect any design to measure academic achievement of students directly involved in career education curriculum activities. Since improvement in academic achievement (Reading Skills and Mathematics Skills) is a major priority of all education, and the project objectives lent themselves to the measurement of these skills, the evaluation plan was revised to include academic testing in reading and mathematics.

13. Dissemination Activities

1. Designed a career education brochure describing the project. This brochure was sent to all professional school personnel in the Northwest Tri-County Intermediate Unit Region (17 school districts), the Pennsylvania Department of Education, the project directors of the other 80 National Career Education Projects, the Manufacturers' Association of Erie, the Erie Chamber of Commerce, 50 State Coordinators for Career Education, and others as per request (See Appendix X).

2. Dissemination was made through several presentations made by project staff throughout the 1975-76 project year. These presentations included a detailed description of the project and an overview of the concept of career education.

   Presentations were made to:

   a) Local Phi Delta Kappa Chapter, Edinboro, Pennsylvania
   b) National Reading Conference, Philadelphia, Pennsylvania
   c) Northwestern School Board, Albion, Pennsylvania
   d) Pennsylvania Department of Education, Harrisburg, Pennsylvania
   e) PDE combined Legislative and Finance Budget Committee, Harrisburg, Pennsylvania
   f) Allegheny County Intermediate Unit, Pittsburgh, Pennsylvania
   g) Manufacturers' Association of Erie, Erie, Pennsylvania
   h) Erie Chamber of Commerce, Erie, Pennsylvania
   i) Northwestern Pennsylvania Cooperative Education Council

3. Articles featured in "Insights" (Northwest Tri-County Intermediate Unit Newsletter) and disseminated to professional educators throughout the Intermediate Unit region (17 school districts), other Intermediate Units around the state of Pennsylvania, the Pennsylvania Department of Education, and the U.S. Office of Education. (See Appendix XI for copy of "Insights" article)

4. A descriptive booklet of the entire project will be printed and copies forwarded to the Pennsylvania Department of Education, the U.S. Office of Education, the 50 State Coordinators of Career Education, and other Office of Career Education Project Directors for dissemination. Copies of the booklet will be made available to other interested educators and community members.

5. An abstract of all facets of the project will be disseminated through information networks such as ERIC (Educational Research Information Center), NIE (National Institute of Education), RISE (Research and Information Service for Education), and VEIN (Vocational Education Information Network).

6. A final evaluation report with its statistical data will be sent to the U.S. Office of Education and other interested agencies for dissemination.

14. Special Activities: None

15. Report Abstract

FINAL REPORT
July 1, 1975-June 30, 1976

A Project to Demonstrate Incremental Improvements in a K-12 Career Education Program Through an Exemplary Model

Project No. 554AH50287
Grant No. G007502398

An Incremental Project

David G. Minnis, Project Director
NORTHWEST TRI-COUNTY INTERMEDIATE UNIT
252 Waterford Street
Edinboro, Pennsylvania 16412
(814) 734-5610

Major Activities

Two Career Education Curriculum Resource Units were developed and four Career Education Curriculum Resource Units were revised by K-12 classroom teachers during the 1975-76 project year. These curriculum resource units included performance objectives for each grade level; introductory, developmental, and culminating activities for each objective, and content items, resources and criterion-referenced evaluation devices for each activity. The resource units were keypunched and stored into a computer for retrieval as per teacher/student requests.

Several inservice meetings were conducted for 17 school districts throughout a three-county area in Northwestern Pennsylvania. These meetings included orientation of career education philosophy and methodology for the implementation of the curriculum resource units.

Community interaction was increased through organized meetings with such organizations as the Manufacturers' Association, Chamber of Commerce, and Explorers of America. These meetings reinforced the need for schools and community to work closer together and initiated plans for a future Career Education Council.

Project Participants

Persons who were directly served by this project include:

Teachers	-	260
Counselors	-	23
Administrators	-	17
Students	-	1,159
Community Representatives	-	226
Parents	-	136

Evaluation

The evaluation plan was basically one of measuring the effectiveness of the K-12 Career Education Curriculum Model. The systems approach was used to measure progress toward the objectives of the project. Specific instruments utilized in the evaluation design include:

1) The Gates MacGinite Reading Test
2) Iowa Test of Basic Skills
3) Stanford Achievement Tests
4) STEP-SCAT Achievement Tests
5) An Individualized Career Education Picture Test
6) The Career Awareness Inventory
7) The Career Maturity Inventory
8) Assessment of Career Development
9) Questionnaires and Opinionaires

A basic experimental-control group, pretest-posttest design was utilized to measure academic achievement (Reading and Mathematics) and career knowledge.

The field testing of students in the K-12 Career Education Project revealed a variety of results:

> In the areas of reading and mathematics achievement minimal differences between the two groups was reported. It should be emphasized that the career units did not provide specific provisions toward teaching these subject areas in a direct fashion. Emphasis must also be directed to the fact that all groups made gains in achievement during the academic year but that it was not possible to show that through the use of the career units greater gains were made by the experimental group.
>
> In the area of career education, the experimantal kindergarten and second grade groups scored significantly higher than their control groups. At the fourth, ninth, and tenth grade levels no significant differences between the groups could be detected. The evaluators were pleased that all students improved in the area of career knowledge within the duration of the project. They also felt that the significant gains made by the experimental kindergarten and second grade groups might be attributed to the fact that students were exposed to many more units than those at the remaining grade levels where significance was not achieved.
>
> In summary, the evaluators felt that in the limited amount of time during which the students were exposed to the project, the benefits of career education could not totally be assessed by the testing program.

Satisfactory progress has been made toward the objective of diffusion of the K-12 Career Education Project. Inservice workshops have been well organized, professionally presented, and contain fundamental ideas of career education. Administrators and teachers were generally receptive to the orientation. Feedback from administrators and teachers was incorporated in ensuing workshops within Intermediate Unit #5.

Teachers who worked as developers of units in the project reacted favorably to the questions asked in the developer questionnaire. The one exception concerned was the lack of opportunity to test learning activities in real situations. Written comments by the developers indicated that teachers felt that the scope and focus of the units reflected excellent learning opportunities for children. Differences between the reaction of elementary teachers and secondary teachers were found in resources being available in the respective schools.

User questionnaire response indicated to the evaluators that, in general, teachers had a favorable reaction to the materials, methodology, and content of the units in the project. Teacher users felt that they needed more specific help in using the guides, implementing specific lessons, and in obtaining instructional resources.

Administrators responded favorably to the format and methodology of the project. Respondents indicated that strengths of the program were in the individualization of instruction, the easy accessibility of the information via the computer, and that the project was a bold attempt to provide career education for a wide range of students. Administrators felt teachers need additional concrete materials and resources locally as well as more assistance in planning and implementing activities in the classroom.

APPENDICES

APPENDIX I

ELEMENTARY TEACHER'S REQUEST FORM

Teacher's Name _____ Unit Title _____

School _____ Request Date _____

Phone No. _____ Subject Area _____

Class Use Date _____

GENERAL CLASS OBJECTIVES

OBJECTIVES

____ ____ ____ ____ ____

____ ____ ____ ____ ____

PROFESSIONAL DECISION-MAKING VARIABLES

(CIRCLE the variable number applicable to your class or classes)

INSTRUCTIONAL LEVEL AND GOALS

1. K -- Immediate Environment (Home-School-Community). -- What is Work?
2. 1 -- Family. -- What are the occupations?
3. 2 -- Community. -- Who works in these occupations?
4. 3 -- Multi-Community. -- What is the life-style?
5. 4 -- State. -- Whom do people work with?
6. 5 -- National. -- Where are these jobs?
7. 6 -- International. -- How do they accomplish their jobs?

STUDY AREA

(CIRCLE any or all study area variables)

18. Reading

27. Math
28. Science
29. Language Arts
30. Social Studies
31. Fine Arts (Art and Music)

APPENDIX I (Continued)

ELEMENTARY STUDENT REQUEST FORM

Student's Name_____ Unit Title_____

School_____ Teacher's Name_____

Phone No._____ Subject Area_____

Request Date_____

OBJECTIVES

____ ____ ____ ____

LEARNER VARIABLES

INSTRUCTIONAL LEVEL AND GOALS -- Circle One

1. K -- Immediate Environment (Home-School-Community). -- What is Work?
2. 1 -- Family -- What are the occupations?
3. 2 -- Community -- Who works in these occupations?
4. 3 -- Multi-Community -- What is the life-style?
5. 4 -- State -- Whom do people work with?
6. 5 -- National -- Where are these jobs?
7. 6 -- International -- How do they accomplish their jobs?

GENERAL INTERESTS -- Circle As Many As Applicable

8. Animals
9. Clubs
10. Entertainment
11. Hobbies
12. Outdoor Life
13. Painting/Drawing/Coloring
14. Play
15. Sports
16. Stories
17. Travel

TO BE COMPLETED BY THE TEACHER ONLY

STUDY AREA -- Circle Any or All Study Area Variables

Reading (Circle One Reading Level)

19. Readiness
20. Primer
21. 1.0
22. 2.0
23. 3.0
24. 4.0
25. 5.0
26. 6.0+

27. Math
28. Science
29. Language Arts
30. Social Studies
31. Fine Arts (Art and Music)

ACHIEVEMENT (Circle One -- Applicable to all study areas EXCEPT Reading)

32. Low Achiever
33. Average Achiever
34. High Achiever

APPENDIX I (Continued)

JUNIOR HIGH TEACHER REQUEST FORM

Teacher's Name _____ Unit Title _____

School _____ Request Date _____

Phone No. _____ Subject Area _____

Request Date _____

OBJECTIVES

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

PROFESSIONAL DECISION MAKING VARIABLES

INSTRUCTIONAL GOALS (Grade Level must match Grade Level of the Objective's chosen)

1. 7 -- Exploration of a variety of occupational relationships (People, Data, Things) and occupational levels.

2. 8 -- Exploration of one or two occupational relationships (People, Data, Things) and occupational levels.

3. 9 -- Exploration of one occupational relationships (People, Data, Things) and one occupational level.

STUDY AREA (Circle study area(s) applicable to your class)

4. Math

5. Social Studies

6. Science

7. Language Arts

8. Industrial Arts

APPENDIX I (Continued)

JUNIOR HIGH STUDENT REQUEST FORM

Student's Name _____ Unit Title _____

School _____ Teacher's Name _____

Phone No. _____ Subject Area _____

Request Date _____

OBJECTIVES

_____ _____ _____ _____

LEARNER VARIABLES

INSTRUCTIONAL GOALS (Grade Level must match Grade Level of the Objectives chosen)

1. 7 -- Exploration of a variety of occupational relationships (People, Data, Things) and occupational levels.

2. 8 -- Exploration of one or two occupational relationships (People, Data, Things) and occupational levels.

3. 9 -- Exploration of one occupational relationships (People, Data, Things) and one occupational level.

STUDY AREA

4. Math

5. Social Studies

6. Science

7. Language Arts

8. Industrial Arts

OCCUPATIONAL LEVELS (Only Applicable to Grades 8 and 9)

11. Management (College Prep Training)

12. Skilled (Post-Secondary Training)

13. Semi-Skilled (Vocational-Technical Training)

14. Non-Skilled (Immediate Employment)

TO BE COMPLETED BY TEACHER ONLY

ACHIEVEMENT LEVEL

15. Below Average

16. Average

17. Above Average

MODES OF LEARNING (Circle the Student's BEST Mode of Learning)

18. Visual (Learning by Means of Sight)

19. Auditory (Learning by Means of Hearing)

20. Tactile/Kinesthetic (Learning by Means of Physical Movement and Touch)

APPENDIX I (Continued)

Senior High

TEACHER'S REQUEST FORM

Teacher's Name_____ Subject Area_____

School_____ Unit Title_____

Phone No._____ Request Date_____

GENERAL CLASS OBJECTIVES

OBJECTIVES

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

PROFESSIONAL DECISION-MAKING VARIABLES

INSTRUCTIONAL LEVELS -- (Circle the applicable level or levels of the student enrollment in your class)

40. Ten -- Fundamental
41. Eleven -- Application
42. Twelve -- Refinement

INSTRUCTIONAL ACTIVITY -- (Multiple Selection)

43. Teacher Demonstrations
44. Problem Solving
45. Field Trips
46. Listening
47. Constructing
48. Classroom Visitor
49. Lecture
50. Student Led Discussion
51. Viewing
52. Creating
53. Interview
54. Dramatization
55. Reading
56. Writing
57. Speaking
58. Laboratory
59. Physical/Tactile
60. Teacher Led Discussion
61. Action/Exploratory
62. Listing
63. Games

APPENDIX I (Continued)

Senior High

Student's Request Form

Student's Name _____ Subject Area _____

School _____ Unit Title _____

Phone No. _____ Teacher's Name _____

OBJECTIVES Request Date _____

____ ____ ____ ____

LEARNER VARIABLES

(There should be a logical correlation between the Career Goal, the Career Cluster and the Study Area selected by the student)

CAREER GOAL -- (Circle One)

At the completion of high school, I plan to . . . . . .

1. Secure immediate employment
2. Enter an apprenticeship program or Pursue skill in training in a technical school
3. Pursue advanced formal education

CAREER CLUSTERS -- (Circle One)

4. Industry
   - Ag-Bus. Natural Resources
   - Construction
   - Manufacturing
   - Marine Science

5. Commerce
   - Business and Office
   - Communications
   - Marketing and Distribution
   - Transportation

6. Services
   - Consumer-Homemaking
   - Environmental
   - Fine Arts and Humanities
   - Health
   - Hospitality and Recreation
   - Personal Service
   - Public Service

Therefore, I Am In This Study Area . . . . . (Circle One)

7. College Prep
8. General
9. Commercial
10. Consumer/Homemaking
11. Agriculture
12. Agriculture -- Business
13. Automotive Mechanics
14. Carpentry
15. Commercial Art
16. Cosmetology
17. Data Processing
18. Distributive Education
19. Drafting and Design
20. Industrial Electronics
21. Electronics Technology
22. Food preparation
23. Machine Shop
24. Tool and Die Technology
25. Welding
26. Air Conditioning
27. Appliance Repair
28. Automotive Body
29. Masonry
30. Plumbing/Pipe Fitting
31. Building Maintenance Trades
32. Graphics
33. Sheet Metal
34. Mill/Cabinet Maker
35. Health Services
36. Hotel/Motel Management

READING ACHIEVEMENT -- (Circle One)

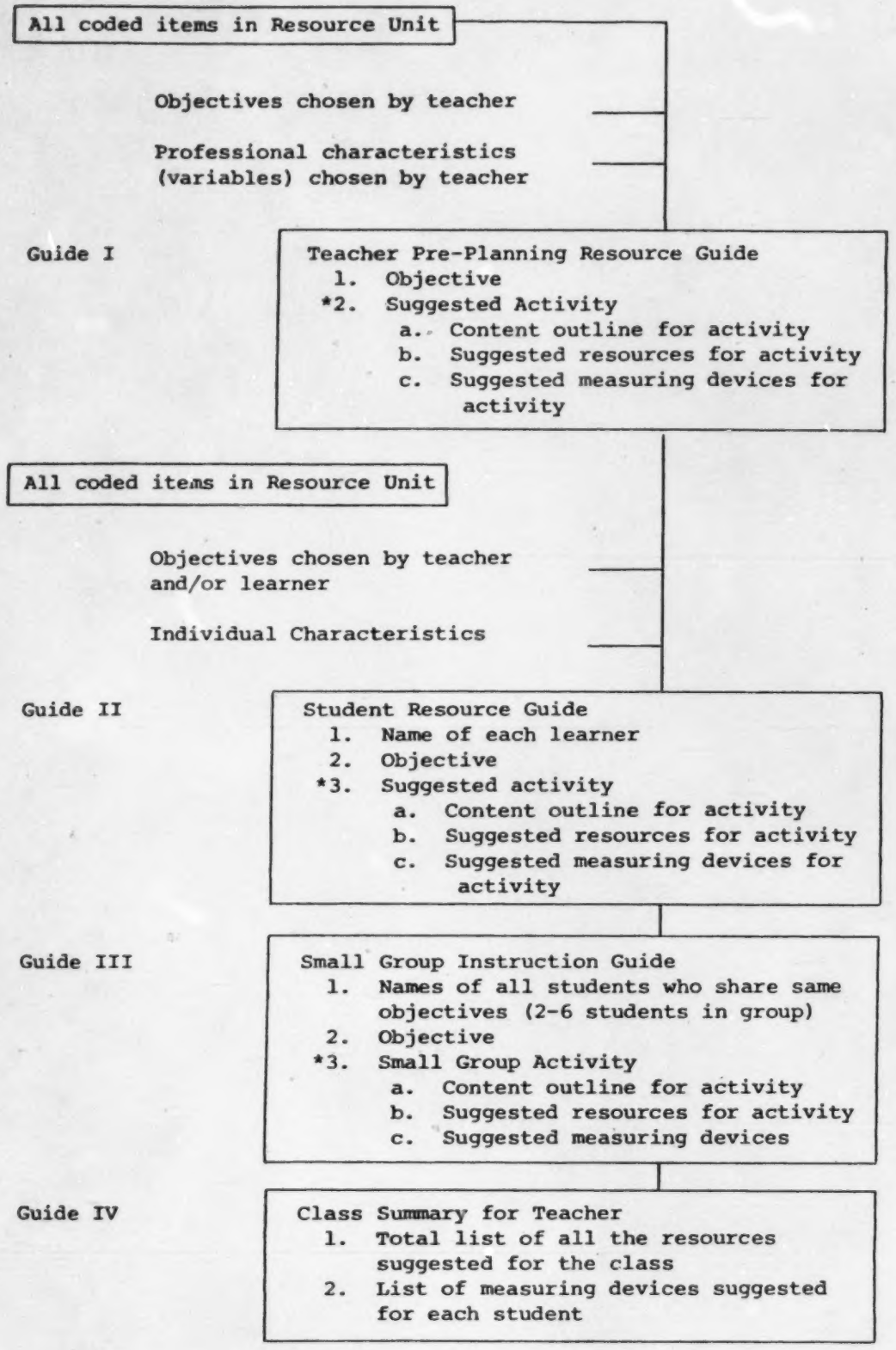
37. Below Average
38. Average
39. Above Average

INSTRUCTIONAL LEVELS -- (Circle One)

40. Ten -- Fundamental
41. Eleven -- Application
42. Twelve -- Refinement

APPENDIX II

UNIT DEVELOPMENTAL FORMAT


All coded items in Resource Unit
Objectives chosen by teacher
Professional characteristics (variables) chosen by teacher
Guide I
Teacher Pre-Planning Resource Guide
1. Objective
*2. Suggested Activity
a. Content outline for activity
b. Suggested resources for activity
c. Suggested measuring devices for activity
All coded items in Resource Unit
Objectives chosen by teacher and/or learner
Individual Characteristics
Guide II
Student Resource Guide
1. Name of each learner
2. Objective
*3. Suggested activity
a. Content outline for activity
b. Suggested resources for activity
c. Suggested measuring devices for activity
Guide III
Small Group Instruction Guide
1. Names of all students who share same objectives (2-6 students in group)
2. Objective
*3. Small Group Activity
a. Content outline for activity
b. Suggested resources for activity
c. Suggested measuring devices
Guide IV
Class Summary for Teacher
1. Total list of all the resources suggested for the class
2. List of measuring devices suggested for each student

NOTE: *Would be repeated for each activity

APPENDIX III

MEAN PRETEST SCORES

Kindergarten

None

Grade Two

	Reading	Math	Career Knowledge
Experimental	2.65	2.39	None
Control	2.67	2.16	None

Grade Four

	Reading	Math	Career Knowledge
Experimental	4.88	4.99	83.53
Control	4.76	4.04	74.40

Grade Nine

	Reading	Math	Career Knowledge
Experimental	8.23	9.23	108.4
Control	8.6	9.31	102.7

Grade Ten

	Reading	Math	Career Knowledge		
			Occupational Knowledge	Occupational Preparation Requirements	Career Planning
Experimental	437.2	440.1	34.60	11.00	24.13
Control	445.2	447.7	35.07	10.80	26.13

APPENDIX IV

t Test Values

COMPARISON OF PRETEST SCORES

CONTENT AREAS

Grade Level	Reading	Math	Career Knowledge
2	.153	1.19	----
4	.326	2.36*	2.30*
9	.619	.137	1.78
10	1.45	1.54	.206

Degrees of Freedom = 28

*Significant: .05 Level of confidence

The statistics in Appendix IV show that the experimental and control groups do not differ significantly except at the fourth grade level. Since the final evaluation was based upon gain scores, these differences are inconsequential.

APPENDIX V

KINDERGARTEN POSTTEST SCORES

		Experimental	Control	D.F.	t Value
Readiness	Mean	87.87	85.93	28	.4493
	Variance	51.84	225.92		
	Number	15	15		
Career Knowledge	Mean	16.80	13.73	28	2.5516
	Variance	11.74	9.92		
	Number	15	15		

APPENDIX VI

SECOND GRADE POSTTEST SCORES

		Experimental	Control	D.F.	t Value
Reading	Mean	3.58	3.91	28	1.2314
	Variance	.544	.555		
	Number	15	15		
Math	Mean	3.04	3.10	28	.2085
	Variance	.401	.580		
	Number	15	15		
Career Knowledge	Mean	17.67	11.87	28	5.8128
	Variance	3.38	11.55		
	Number	15	15		

APPENDIX VII

FOURTH GRADE POSTTEST SCORES

		Experimental	Control	D.F.	t Value
Reading	Mean	5.75	5.17	28	1.5913
	Variance	.299	1.569		
	Number	15	15		

Mathematics

Source	S.S.	D.F.	M.S.	F
Treatments	.9239	1	.9239	3.4060
Error	7.3454	27	.2720	
Total	8.2693	28		

Career Knowledge

Source	S.S.	D.F.	M.S.	F
Treatments	.4717	1	.4717	.0062
Error	2032.81	27	75.2891	
Total	2033.28	28		

APPENDIX VIII

NINTH GRADE POSTTEST SCORES

		Experimental	Control	D.F.	t Value
Reading	Mean	9.35	8.87	26	.5636
	Variance	4.43	5.75		
	Number	15	13		
Math	Mean	8.44	8.54	26	.0988
	Variance	2.62	10.63		
	Number	15	13		
Career Knowledge	Mean	33.47	32.46	26	.5699
	Variance	12.69	29.44		
	Number	15	13		

APPENDIX IX

TENTH GRADE POSTTEST SCORES

		Experimental	Control	D.F.	t Value
Reading	Mean	441.538	450.154	24	1.5687
	Variance	147.500	244.667		
	Number	13	13		
Math	Mean	442.654	451.423	24	1.7172
	Variance	172.917	166.083		
	Number	13	13		
Career Knowledge	Mean	65.231	74.231	24	1.9059
	Variance	166.231	123.193		
	Number	13	13		